

**Minutes of the November 5, 2007
Meeting of the Western Interstate Energy Board
Tucson, Arizona**

Board Chair Tony Usibelli (WA) called the meeting to order. The following state/provincial representatives participated in the meeting:

Alberta	Ian McKay
Arizona	Lori Faeth / Jessica Youle
British Columbia	Ed Higginbottom
California	Bill Chamberlain / Tim Tutt
Colorado	Not present
Idaho	Lisa Pederson
Montana	Paul Cartwright / Tom Kaiserski
Nebraska	Not present
Nevada	Hatice Gecol
New Mexico	Joanna Prukop
Oregon	Jeff Keto
Saskatchewan	Mike Balfour via phone
Utah	Dianne Nelson
Washington	Tony Usibelli
Wyoming	Steve Ellenbecker

Minutes

Tony Usibelli (WA) asked for comments on the draft minutes of the previous April 3, 2007 meeting. Ian McKay (AB) identified a correction regarding a description of policies in Alberta between wind developers and the Alberta Electric System Operator. Bill Chamberlain moved to adopt the minutes as amended and Joanna Prukop (NM) seconded the motion. The Board approved the [minutes](#) as amended.

Report on Board and Committee Activities

Doug Larson [reviewed](#) the Board activities and noted WGA priorities, the wind-advanced coal hybrid study, and WREGIS. Jim Williams joined the WIEB staff to cover High Level Waste issues. The Executive Committee revised the policies and procedure manual for WIEB personnel.

Reclamation Committee. Rick Chancellor, Chair of the Reclamation Committee, joined the meeting by phone to brief the Board on a [proposal](#) to change the name of the Board's Reclamation Committee to the Energy Mineral Reclamation Committee and broaden the scope of the Committee's work to include the regulation of the environmental impacts of energy mineral production, except for oil and gas. Chancellor explained the name and scope change was motivated by the recent surge in

uranium prices and a corresponding increase in *in situ* uranium mining. In response to Board member questions, Chancellor clarified that the proposal does not require additional funding. Steve Ellenbecker (WY) moved to adopt the proposal and Joanna Prukop (NM) seconded the motion. The Board approved the motion. Tony Usibelli (WA) asked Doug Larson to keep the Board apprised of the Committees expansion into uranium and if it needs to expand into other areas.

CREPC. Doug Larson briefed the Board on CREPC's activities. CREPC filed comments to DOE its proposed designation of a National Interest Electric Transmission Corridor (NIETC) in the southwest covering parts of southern California and western Arizona, and comments to the Federal Energy Regulatory Commission (FERC) to consider immediate reporting of transactions under the WSPP agreement for market monitoring purposes.

Financial Report

Doug Larson [reported](#) that WIEB is in good financial shape. All entities had provided funding except Nebraska. Larson noted that John Savage will ask the Western Conference of Public Service Commissioners (WCPSC) to increase its financial support to CREPC from \$12,000 to \$25,000. CREPC's current budget has declined to 13% of the proposed 2006 budget for various reasons including shifting priorities and funding sources. The Board was not asked to take any action.

Western Governors' Association (WGA) Activities

Steve Ellenbecker (WY), WGA Staff Council Chair, reported on [WGA energy related activities](#) and the correlation with WIEB activities. As follow-up to the Clean and Diversified Energy Initiative (CDEi), WGA completed three workshops this past fall on energy efficiency, advanced coal, and renewables and transmission. The energy efficiency workshop will lead to a report that will be released soon. The advanced coal workshop will produce a report on advanced coal technologies and carbon capture and sequestration. The renewables and transmission conference was held in Fort Collins in September.

Ellenbecker also reported on the WGA wildlife corridor initiative which will pull together the best maps and data on wildlife and provide recommendations in the future, and the forthcoming Staff Council meeting.

Board members raised a number of points in response to WGA activities. Bill Chamberlain (CA) commented that a new joint report by the California Energy Commission and Air Resources Board examines alternative transportation fuel issues in response to AB 1007. Ellenbecker noted that the next WGA summer meeting will be June 29 in Jackson, WY, and that climate change, transmission, and renewable energy development will be plenary sessions at the Jackson meetings. A discussion ensued regarding the tension among resource options and the implications for climate change objectives of the Western Climate Initiative. Ellenbecker acknowledged the tension and

characterized the WGA approach as one that considers a mix of all available resource options without ignoring CO2 emissions.

Status of Work on Board's Priorities for Collaboration on Climate Change Related Activities

Analysis of LSE resource plans. This topic was deferred to the joint WIEB-CREPC meeting later in the afternoon.

Integration of large amounts of variable output renewables into the power system.

Wind Integration Studies. Debbie Lew (NREL) [briefed](#) the Board on the status of wind integration studies recently completed or in progress. A new study in Minnesota estimated integration costs of \$5/MWh for a wind penetration level of 25% of energy, and that combining regulating reserves reduces integration costs. The Northwest Wind Integration Forum just completed collecting mesoscale wind data for three historic years. BPA is developing a wind integration tariff. Two other studies in the Northwest were conducted by Avista and Idaho Power. Avista examined 30% wind integration. The Idaho Power study estimated integration costs \$10-\$12/MWh which was higher than most other studies and subsequent reviewers cited some anomalies. The California Energy Commission's Intermittent Analysis Project found that a high penetration scenario (2010X) with additions of 12,500 MW of wind and 2600 MW of solar could occur by 2010 at modest cost if accompanied by other flexible generation sources and changes to market design. The California ISO pursued an operational study that found wind penetration at 20% manageable. This study examined ramp rates in more detail, and identified the importance of day ahead markets and wind forecasting. An APS wind integration study estimated integration costs at \$4/MWh for a 10% penetration level, and found that geographical diversity of wind resources could significantly lower integration costs. The Southwest Wind and Solar Integration Study is a NREL project that will examine wind and solar integration in the WestConnect footprint. This study is developing mesoscale wind data and will consider geographical diversity over the region, wind forecast effects.

Board members raised questions about storage technologies, plug-in hybrids, geographic diversity, and integration problems in Montana. Ed Higgenbottom (BC) commented that BCTC initiated a wind integration study. Lew observed that a logical next step to these studies is to pursue a WECC-wide integration study.

Western Renewable Energy Zones. Doug Larson discussed the concept of the [Western Renewable Energy Zone \(WREZ\)](#) which is a [proposal](#) that developed at the WGA Fort Collins renewables and transmission summit. Since the Fort Collins meeting, a small team was formed to explore the feasibility of a WREZ project. Larson and WGA staff contacted DOE sources to inquire about funding. Numerous issues were identified including the purpose, benefits of the project, how it would work, structure and governance, and how the federal government can help. Debbie Lew outlined the

methodology to implement the WREZ project. The first step would be to identify concentrations of high valued renewable resources. Information would be developed on maps and a spreadsheet type model could be built to derive the delivered cost of energy from zones. The project would build on existing state efforts. Supply curves would be derived from energy zones. Transmission corridors would also be indentified to link sources to sinks.

Board members raised questions and discussed different features of the WREZ proposal. Steve Ellenbecker (WY) observed that with many states adopting RPS requirements, individual states need to look beyond their borders for renewable energy. Joanna Prukop (NM) inquired how to get buy-in from state PUCs and infrastructure authorities. Tony Usibelli (WA) asked about the criteria for zones. Paul Cartwright (MT) asked about the connection to existing state efforts. Usibelli asked if anyone had concerns about the proposal and concluded there was consensus to endorse moving forward. Lori Faeth indicated that she has concerns about the project.

High Plains Express State Team. Doug Larson and Steve Ellenbecker (WY) briefed the Board on a second proposal from the WGA Fort Collins summit regarding forming a [state team for the High Plains Express](#) transmission project (HPX). Larson noted that some observers at the summit identified states as obstacles in transmission development. The general concept is to form a state team around a proposed transmission project to facilitate moving the project forward in appropriate direction. A state team for the HPX project would be a pilot project to test the concept. A conference call was held among four states in the HPX footprint (AZ, NM, CO, WY) to explore the proposal. The concept will be raised at a HPX stakeholder meeting in Denver on November 14. The state team could collaborate on issues of cost allocation, line siting concerns, and interact with industry.

Board members commented on the state team concept. Lori Faeth (AZ) raised concern to ensure renewables other than wind would be in the project and that WIEB isn't over extending staff resources. She also noted that this effort could test the WGA Transmission Permitting Protocol adopted in 2002. Steve Ellenbecker (WY) observed that if this model works it could be used for other projects and that the state team would facilitate the transmission project. Joanna Prukop (NM) noted the tie to regional generation planning. Tim Tutt (CA) expressed interest in seeing an economic analysis of the HPX project power delivered to California.

Hybrid generation options. Amol Phadke of Lawrence Berkeley National Laboratory (LBNL) briefed the Board on preliminary findings of the WIEB and DOE study of [wind/advanced coal hybrid study](#). The core analytic team consists of people from NREL, LBNL, the National Energy Technology Laboratory (NETL) and WIEB. A Steering Committee consists of a diverse stakeholder group. The project is an economic and technical feasibility study to determine if there are advantages to combine a wind farm and advanced coal facility linked to transmission. Advanced coal in this study means the gasification of coal with carbon capture and sequestration. The economic rationale for a hybrid project is to improve the utilization of the transmission line and to

firm up wind at delivery to load. The economic merit of the hybrid facility depends upon a tradeoff between generation and transmission costs. Fuel production hybrid options have certain advantages because of the capability to store the fuel. Phadke outlined the resources considered and identified key parameter assumptions. Many of the technical assumptions were provided by NETL. The study considers multiple hybrid technologies with fuel production that include syncrude, synthetic gas and methanol. All coal-wind hybrid options were assumed to have a 3000 MW IGCC type facility, 1500MW of wind generation, and 3000 MW of transmission line. Phadke developed a spreadsheet model to evaluate the economics of different hybrid configurations and competing generating options. Preliminary results showed the hybrid facility is cost competitive with competing options. Sensitivity analysis was performed to evaluate the impacts of changing key assumptions.

Phadke fielded questions from Board members about the hybrid project. Paul Cartwright (MT) inquired about the ramp rates of the fuels plants. The syncrude facility ramps at 1% per minute and the gas facility ramps at 2% per minute. Steve Ellenbecker (WY) asked about the availability of the final report. After the project is finished, DOE will make a decision how to release the report and any follow up role for LBNL.

Electrification of the Transportation Sector. Gayle Gordon of the WGA [briefed](#) the Board on the WGA Transportation Fuels Initiative and the report of the Electric Transportation team. In June 2006 Western Governors passed a resolution on alternative transportation fuels. The WGA organized a steering committee and an advisory committee representing stakeholders. Six teams were established to address specific areas including the Electric Transportation team. Key challenges identified to expand electric vehicles were: battery technology, acceptance by consumers, and infrastructure developments for consumer home refueling, off peak pricing, and on-the-road refueling. The task force adopted five priority recommendations: (1) Provide stable funding at the federal and state level for battery research; (2) Support federal, state, and local demonstration projects for plug-in hybrids vehicles; (3) Revise government fleet purchasing programs to provide certainty to manufacturers and promote technological development; (4) Address uncertainty of new technology by providing consumer support through financing and insurance options, e.g. extended warranties and utility financing of batteries; (5) Increase state level cooperation with utilities and develop financing mechanisms to address the upfront costs of plug-in hybrid vehicles. Board members discussed and commented on the WGA fuels project. The final [Electric Transportation report](#) was issued January 2008. The WGA issued the final [Transportation Fuels report](#) in February 2008.

LBNL Future Research. Chuck Goldman (LBNL) briefed the Board on eight potential projects that LBNL could pursue over the next year. The Board agreed that members should communicate their priorities on potential LBNL projects to Doug Larson after the meeting.

Meeting was adjourned for lunch and reconvened for a joint meeting with CREPC.

**Joint Meeting of the
Western Interstate Energy Board and the
Committee on Regional Electric Cooperation
November 5, 2007**

Tony Usibelli (WA), Chair of WIEB, and John Savage, Chair of CREPC, called the joint meeting to order and outlined the agenda.

U.S. Federal Legislation on Greenhouse Gas

Kevin Moran (WGA) briefed CREPC and WIEB on federal energy and climate change legislation. Moran first discussed a bill by Senator Harry Reid S. 2076 that calls for the Western Area Power Administration to play a more active role by providing new transmission and a process to encourage development of renewable energy zones. Moran characterized the bill has creating interest but it did not show signs of viability given the lack of hearings or co-sponsors.

Moran then addressed [climate change legislation](#). He identified the [Lieberman-Warner bill, S. 2191](#), as the only climate change legislation moving forward through Congress. There may be hearings on the bill before Thanksgiving and it is possible that this bill could get the critical 60 votes needed in the Senate. The Lieberman-Warner bill would establish 2012 baseline emissions at 2005 emission levels and require 63% reduction in emissions by 2050 below the 2005 level of emissions. The bill would create emission permits worth \$125 billion that would cover 75% of GHG emissions. The initial allocations of permits would be free to entities currently releasing emissions and shift over to an auction system to sell off the permits. The bill contains provisions that provide incentives for early action to reduce emissions, creates a carbon market efficiency board, allows offsets up to 15%, and stipulates that all allowances will be auctioned off by 2036.

State/Provincial Climate Initiatives

Patrick Cummins (WGA) provided an update on the [Western Climate Initiative](#) (WCI). In February 2007, five Governors (WA, OR, CA, AZ and NM) signed a climate initiative committing them to design a regional cap and trade system for greenhouse gases. Utah, British Columbia and Manitoba have since joined the original five states. A number of other states (KS, NV, WY, CO, ID, and AK), provinces (SK, Quebec, Ontario) and Senora, Mexico have signed on as observers. The WCI has set a goal to reduce GHG emissions by 15% below 2005 levels by 2020. A milestone has been set that by August 2008 the WCI will describe the design of a cap and trade system. The WCI established five subcommittees: reporting, regulatory scope, electricity, allocations and offsets. The Climate Registry was created to serve as one multistate registry. There are now 39 members in the Climate Registry. Future meetings of the WCI are planned in Tempe and Portland.

Cummins responded to numerous questions with the following points. The designees of Governors and Premiers will be the ones to design the WCI cap and trade system. There is economic analysis underway in California to calculate the economic impacts of AB 32 which is California's legislation to reduce GHGs. The WCI will need better data to implement a cap and trade system and there is no specific date set to impose cap and trade regulations. The WCI had not resolved whether it will use a generation-based system or a load-based system.

Current Direction of Western IRPs and Greenhouse Gases

Chuck Goldman (LBNL) introduced Galen Barbose (LBNL) who made a [presentation](#) on an analysis of western utility IRPs approaches to GHG risk. The study looked at 15 utilities that account for about 60% of the load in the Western Interconnection. The study identified each utility's preferred resource mix, examined how different utility IRPs treat the risk of GHG regulation, and derived the carbon footprint of these utilities. Utilities adopted different approaches to account for carbon costs in planning. Many assumed either a cap and trade system or a carbon tax. There was a wide range of assumptions for a carbon tax. Five utilities assumed no carbon price. The analysis looked at each utility's type and quantity of low carbon resources such as energy efficiency, renewables, and non-renewables with low carbon emissions. Some utilities looked at indirect impacts of carbon regulation. LBNL issued the [final report](#) in March 2008.

WECC Concerns and Activities Regarding Greenhouse Gas Limits and RPS

Connie White (WECC) provided an update on [WREGIS](#) which became operational this year.

Louise McCarren (WECC) identified issues of concern with increased renewables and potential future carbon regulation in the electric system. More renewables are being added to the system and much of these renewables are intermittent resources. McCarren said there is a need to model the renewable generation and its impact on the overall reliability of the system. The general rule is if you haven't studied specified system conditions, you can't operate there. WECC generally evaluates the balance between peak loads and resources on a seasonal and 10 year out framework. McCarren questioned how one counts the capacity factor of wind and raised concern about the low peak capacity values for wind generation.

WECC's new Westwide System Model will provide real time data and provide a much better picture of how wind impacts the system. Wind raises the question of the size of Balancing Authorities. There may be pressure to consolidate or virtually consolidate Balancing Authorities in order to accommodate more wind on the system. Transmission planning is important to developing future wind resources. McCarren questioned how the new regime of registration and mandatory reliability standards will apply to wind developers. She anticipates this to be an issue in the future.

In response to questions, McCarren made the following points.

- WECC has not addressed the issue whether data in the Westwide Model will be public. Her view is that if the data is on a historical basis it should be available for analysis by parties other than just operators.
- WECC has not yet decided how to respond to NERC's request for scenarios in the Long Term Resource Assessment.
- WECC has not evaluated the impact of carbon legislation on the future resource mix.
- The West operates under a number of Remedial Action Schemes (RAS). Early work by NERC to consolidation of standards would outlaw RAS. If RAS is not allowed, the cost to the Western Interconnection could be as high as \$10-15 billion.
- It is important for western parties to registering as part of the NERC ballot body in order to weigh in on these issues.

Identification of Renewable Energy Zones in the Western Interconnection

California. Traci Bone (CA PUC) made a [presentation](#) on California's [Renewable Energy Transmission Initiative \(RETI\)](#). The RETI process was inspired by a Southern California Edison advice letter and two California Energy Commission PIER contracts that were both looking at renewable resource potential. RETI is a statewide collaborate study effort that includes investor-owned utilities (IOUs), publicly owned utilities, CPUC, CEC, CAISO, renewable developers, environmental groups, and other interested parties. Three distinct phases are planned under RETI. Phase 1 will be a resource assessment by the target date of August 2008. This assessment will identify the developable potential of the competitive renewable energy zones (CREZs). The process is designed to pull together data on existing work, focus on the commercial potential, develop consistent assumptions, quantify the physical resource base, rank the renewable energy zones, seek validation from stakeholders, and be executed by consultants who respond to stakeholders. Phase 2 will develop high-level transmission pathways for the highest ranking CREZs using existing planning organizations and institutions. Phase 3 seeks to use existing planning institutions to collaboratively design transmission plans of service that will result in applications to construct new RPS transmission infrastructure.

Colorado. Jeff Hein (CO PUC) [briefed](#) the meeting on Colorado's efforts to identify renewable resources. The 2007 legislative session passed three key bills: SB 100, SB 91 and HB 1150. [SB 100](#) requires IOUs to identify energy resource zones in Colorado. It authorizes current cost recovery for utilities that build transmission to such zones. SB 91 established a 16 member task force to map renewable energy resources and transmission capability in the state. HB 1150 created the Clean Energy Development Authority that will have the authority to encourage investment in transmission and clean energy technologies. Hein concluded with a brief discussion of the proposed High Plains Express transmission project.

Nevada. Hatice Gecol (NV EO) [presented](#) Nevada's renewable energy initiatives. Nevada has a RPS standard for 20% by 2015. Governor Gibbons issued four executive orders in the past year: streamline permitting for renewable energy projects, form the Nevada Climate Change Advisory Committee, create the [Renewable Energy Transmission Access Advisory Committee](#) (RETAAC), and implement the Renewable Energy Investment Advisory Committee. The RETAAC has 14 members representing state agencies, utilities, the Nevada PUC, and renewable industries. Seven subgroups were formed along technologies and transmission categories. RETTAC is charged with identifying renewable resources in Nevada, identifying existing and planned transmission access routes, make recommendations for identifying other line routes, work with utilities on network upgrades for renewable development and identify ways to equitably pay for these upgrades. RETAAC will develop maps that overlay the economically developable renewable energy resources with transmission facilities and the restricted military areas. It will also identify and rank priority zones for geothermal, solar, wind and biomass resources, and then assess the transmission in the priority of zones.

Arizona. Prem Bahl (ACC) discussed Arizona's recent initiatives to identify renewable energy zones. Arizona has a 15% RPS requirement by 2025. In the ACC's biennial assessment, the Commission ordered Arizona's utilities to identify renewable energy resources in Arizona and identify available transmission capacity. The utilities hired a contractor, Black & Veatch to conduct a comprehensive assessment of Arizona's renewable resources. Issued in September 2007, the [Arizona Renewable Energy Assessment](#) identified 3,000 to 4,000 MW of renewable energy resources suitable for development over the next 20 years.

Proposed Western Interconnection WREZ Analysis

Doug Larson (WIEB) presented background on the [Western Regional Energy Zone \(WREZ\) project proposal](#). A number of individual states are doing interesting renewable energy work. At the WGA renewables and transmission summit in Fort Collins, it was recommended that the governors pursue an interconnection-wide renewable energy zone project. A small brainstorming group was formed to develop the idea. The issued is raised before CREPC today to solicit feedback and inquire about interest in the project.

Traci Bone (CA PUC) described the progress of the brainstorming group to date. Bone described the purpose of a WREZ project and how the initiative would work. Phase 1 would identify commercially potential energy zones and estimate the bus bar price and delivered price of energy. The identification of renewable energy zones would be validated by a stakeholder input. Phase 2 would have subregional groups and WECC develop conceptual transmission plans to the highest renewable energy zones. Phase 3 would entail reporting to Governors on remaining obstacles to transmission to move renewables. Phase 4 would identify institutional options for coordinated permitting and cost recovery. Bone also discussed how the federal government could support transmission to renewable energy zones, the governance structure of the project, and how DOE can support the WREZ initiative.

Debbie Lew (NREL) outlined the methodology of the WREZ analysis. Step one identifies concentrations of high valued renewable resources throughout WECC. Maps would show contiguous areas with renewable resources. A model could be built to derive the cost of energy from zones. Supply curves would be derived from energy zones. Transmission corridors would also be identified to link sources to sinks.

John Savage (OR) asked if there was general agreement behind the WREZ concept and concluded there was consensus to move the project forward.